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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,196	01/21/2004	Xiaojia Wang	07783.0078.NPUS01	2492
27194	7590	08/03/2005	EXAMINER	
HOWREY LLP C/O IP DOCKETING DEPARTMENT 2941 FAIRVIEW PARK DRIVE, SUITE 200 FALLS CHURCH, VA 22042-2924			HON, SOW FUN	
			ART UNIT	PAPER NUMBER
			1772	

DATE MAILED: 08/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/762,196

Applicant(s)

WANG ET AL.

Examiner

Sow-Fun Hon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 80-112 is/are pending in the application.
- 4a) Of the above claim(s) 84-86,94-96,101 and 102 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 80-83,87-93,97-100 and 103-112 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/07/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 80-83,87-93,97-100,103-112, drawn to an article, classified in class 428, subclass 1.5.
 - II. Claims 84-86,94-96,101-102, drawn to a process, classified in class 349, subclass 190.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the process can also comprise an additional step of adding a photosensitizer to accelerate hardening of the sealing layer.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Viola Kung on 11/30/04 a provisional election was made with traverse to prosecute the invention of Group I, claims 80-83,87-93,97-100,103-112. Affirmation of this election must be made by applicant in replying to this Office action. Claims 84-86,94-96,101-102 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

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5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 80-83,87-93,97-100,103-112 are rejected under 35 U.S.C. 103(a) as being obvious over Chen et al. (US 6,545,797).

The applied reference has a common assignee, and common inventor Rong-Chang Liang, with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same

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party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Regarding claim 80, Chen teaches an electrophoretic display which comprises display cells filled with a display fluid (column 7, lines 10-20) and top-sealed (overcoating the EPD fluid) (column 7, lines 40-45) with a sealing composition comprising polyisoprene (column 10, lines 60-65) which is a high dielectric polymer. Chen teaches that the sealing composition is preferably hardened by radiation, hardened or cured by solvent evaporation or a combination of two or more methods to increase the throughput of the sealing step (column 7, lines 30-40). Therefore, because Chen teaches that a combination of two methods is used to increase the throughput of the sealing step, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have provided a sealing composition comprising a high dielectric polymer or oligomer and a radiation curable composition, in order to obtain the desired sealing properties.

Regarding claims 81-82, Chen teaches that the filled and sealed microcup array is then laminated onto a conductor film ITO on PET substrate with an adhesive (column 7, lines 52-57). Therefore the sealing layer is between the display fluid and an adhesive layer on a substrate or electrode layer.

Regarding claim 83, although Chen fails to disclose the composition of the adhesive

layer, because Chen teaches the composition of the sealing layer, and sealants also function as adhesives, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used an adhesive with a similar composition to the composition of the sealing layer, which is a composition comprising a high dielectric polymer or oligomer and a radiation curable composition, in order to obtain good adhesion.

Regarding claim 87, Chen teaches a semi-finished display panel (Fig. 1E) which comprises: a) an array of filled display cells on an electrode 2 or substrate layer 3, which filled display cells are top-sealed with a sealing layer 5 (column 4, lines 20-30), wherein said sealing layer is formed from a sealing composition comprising polyisoprene (column 10, lines 60-65) which is a high dielectric polymer. Chen teaches that the sealing composition is preferably hardened by radiation, hardened or cured by solvent evaporation or a combination of two or more methods to increase the throughput of the sealing step (column 7, lines 30-40). Therefore, because Chen teaches that a combination of two methods is used to increase the throughput of the sealing step, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have provided a sealing composition comprising a high dielectric polymer or oligomer and a radiation curable composition, in order to obtain the desired sealing properties.

Although Chen fails to teach b) a temporary substrate laminated on top of the filled and top-sealed display cells, because Chen teaches that roll-to-roll continuous manufacturing is applicable (column 7, lines 58-60), and a temporary substrate laminated on top of the filled and top-sealed display cells functions as a protective support, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have laminated a temporary

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substrate on top of the filled and top-sealed display cells, in order to provide temporary protective support during the roll-to-roll continuous manufacturing process.

As an alternate embodiment, Chen teaches c) an array of filled display cells, which filled display cells are top-sealed with a sealing layer (column 3, lines 45-55); and d) an electrode or substrate layer laminated on top of the filled and top-sealed display cells (column 7, lines 52-57). Although Chen fails to teach that the array of filled display cells are on a temporary substrate, because Chen teaches that roll-to-roll continuous manufacturing is applicable (column 7, lines 58-60), and a temporary substrate functions as a protective support, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have placed the filled and top-sealed display cells on a temporary substrate, in order to provide temporary protective support during the roll-to-roll continuous manufacturing process.

Regarding claim 88, Chen teaches that the display cells are microcups (column 3, lines 45-50).

Regarding claim 89, although Chen fails to teach a release liner as a temporary support, a release liner provides good release. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have provided a release liner as a temporary support, in order to obtain good release of the filled and top-sealed microcup array for the step of laminating the electrode or substrate layer on top of the filled and sealed microcup array.

Regarding claim 90, Chen teaches polyesters, polyvinyl alcohol, polyvinylpyrrolidone, styrene copolymers (column 5, lines 50-60), vinyl ether copolymers, acrylic or methacrylic copolymers (polyester acrylates, column 5, lines 10-20) as compounds used to form the microcups, all of which have high dielectrics, wherein the oligomers can be

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used (column 5, lines 20-25). The sealing composition should be similar to the microcup composition in order to provide uniform structural properties for the finished display cell.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used the high dielectric polymer or oligomer microcup materials of Chen, in the sealing composition of Chen, in order to obtain uniform structural properties for the finished display cell.

Regarding claim 91, Chen teaches that the radiation curable composition comprises a multifunctional monomer or oligomer (multifunctional acrylates and their oligomers, column 5, lines 15-20).

Regarding claims 92-93, Chen teaches that the sealing composition is crosslinked (cured, column 7, lines 40-45) which implies a crosslinking agent and/or a catalyst. Chen teaches a crosslinking agent (Irgacure) and a catalyst (thioxanthone) for the microcup composition (column 8, lines 18-24) which can be the same for the sealing composition.

Regarding claim 97, Chen teaches a semi-finished display panel (Fig. 1E) which comprises: a) an array of filled and top-sealed display cells, which filled display cells are top-sealed with a sealing layer 5 (column 4, lines 20-30), wherein said sealing layer is formed from a sealing composition comprising polyisoprene (column 10, lines 60-65) which is a high dielectric polymer. Chen teaches that the sealing composition is preferably hardened by radiation, hardened or cured by solvent evaporation or a combination of two or more methods to increase the throughput of the sealing step (column 7, lines 30-40). Therefore, because Chen teaches that a combination of two methods is used to increase the throughput of the sealing step, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have

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provided a sealing composition comprising a high dielectric polymer or oligomer and a radiation curable composition, in order to obtain the desired sealing properties.

Although Chen fails to teach that the array of filled and top-sealed display cells are between two temporary substrate layers, because Chen teaches that roll-to-roll continuous manufacturing is applicable (column 7, lines 58-60), and a temporary substrates function as protective supports, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have placed the filled and top-sealed display cells between two temporary support layers, in order to provide temporary protective support during the roll-to-roll continuous manufacturing process.

Regarding claim 98, Chen teaches that the display cells are microcups (column 3, lines 45-50).

Regarding claim 99, Chen teaches that the microcups are prepared by lithography (column 2, lines 10-25).

Regarding claim 100, although Chen fails to teach a release liner as a temporary substrate, a release liner provides good release. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have placed the array of filled and top-sealed display cells between two release liners as temporary substrates, in order to obtain good release.

Regarding claims 103-104, Chen teaches that the panel is in the form of a roll (column 7, lines 58-60).

Regarding claim 105, Chen teaches a finished display device which comprises (a) an array of filled microcups on an electrode layer (52-62), wherein said filled microcups are top-

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sealed with a sealing layer (column 7, lines 45-50), and said sealing layer is formed from a sealing composition comprising polyisoprene (column 10, lines 60-65) which is a high dielectric polymer. Chen teaches that the sealing composition is preferably hardened by radiation, hardened or cured by solvent evaporation or a combination of two or more methods to increase the throughput of the sealing step (column 7, lines 30-40). Therefore, because Chen teaches that a combination of two methods is used to increase the throughput of the sealing step, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have provided a sealing composition comprising a high dielectric polymer or oligomer and a radiation curable composition, in order to obtain the desired sealing properties.

Although Chen fails to teach (b) a protective coating on the sealed microcup array, protective coatings are notoriously well known in the art. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have provided a protecting coating on the sealed microcup array, in order to provide additional protection against the operating environment.

Regarding claim 106, Chen teaches that the finished display comprises one electrode layer (conductive film, column 3, lines 20-25).

Regarding claim 107, while Chen fails to teach a protective coating comprising a particulate additive, a particulate additive such as silica is a common filler which provides hardness, is notoriously well known in the art. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have coated the sealed microcup array with a protective coating comprising a particulate additive, in order to provide a hardcoat that protects the seal on the microcup array.

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Regarding claim 108, Chen teaches a patterned electrode (conductor film, column 2, lines 20-25).

Regarding claim 109, Chen teaches a finished display device which comprises (a) an array of filled microcups on an electrode layer (52-62), wherein said filled microcups are top-sealed with a sealing layer (column 7, lines 45-50), and said sealing layer is formed from a sealing composition comprising polyisoprene (column 10, lines 60-65) which is a high dielectric polymer. Chen teaches that the sealing composition is preferably hardened by radiation, hardened or cured by solvent evaporation or a combination of two or more methods to increase the throughput of the sealing step (column 7, lines 30-40). Therefore, because Chen teaches that a combination of two methods is used to increase the throughput of the sealing step, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have provided a sealing composition comprising a high dielectric polymer or oligomer and a radiation curable composition, in order to obtain the desired sealing properties.

Chen teaches (b) a second electrode layer on the top-sealed microcup array wherein said second electrode layer is disposed onto the top-sealed microcup array by lamination (column 7, lines 52-57).

Although Chen fails to teach (c) a protective coating on the sealed microcup array, protective coatings are notoriously well known in the art. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have provided a protective coating on the sealed microcup array, in order to provide additional protection against the operating environment.

Regarding claim 111, while Chen fails to teach a protective coating comprising a

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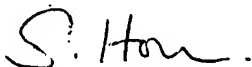
particulate additive, a particulate additive such as silica is a common filler which provides hardness, is notoriously well known in the art. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have coated the sealed microcup array with a protective coating comprising a particulate additive, in order to provide a hardcoat that protects the seal on the microcup array.

Regarding claim 112, Chen teaches a patterned electrode (conductor film, column 2, lines 20-25).

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on (571)272-1498. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sow-Fun Hon

12/10/04